

CALIFORNIA STATE DEPARTMENT OF PUBLIC HEALTH

ESTABLISHED APRIL 15, 1870

BERTRAM P. BROWN, M.D., Director

Weekly Bulletin



JUN 26 1941

University of California

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Entered as second-class matter February 21, 1922, at the post office at Sacramento, California, under the Act of August 24, 1912. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917.

Vol. XX, No. 21

June 14, 1941

GUY P. JONES
EDITOR

Salt for Heat Exhaustion

By JOHN P. RUSSELL, M.D., Chief, Industrial Hygiene Services, State Department of Public Health

It is suggested that tablets of pure sodium chloride be provided for those persons who are exposed to high temperatures. The 10-grain tablets are considered to be the most convenient size. They are now being supplied in dispensers, at or near drinking fountains, in many industrial plants. These tablets are quite inexpensive, and may be obtained from drug stores or from the manufacturers.

The cause of heat sickness is the loss, through sweating, of a large amount of body liquids and salt. Sweat is a dilute liquid containing from 0.1 to 0.5 per cent sodium chloride.

Dr. Cecil K. Drinker, of the Harvard School of Public Health, states that in some industries in which workers are exposed to intense heat, the amount of sweat produced by the body may amount to as much as two gallons a day. Some Russian investigators have reported a sweat loss of as much as two and a half gallons in five hours. Dr. Haldane found that miners in the Lancashire coal pits lose about two gallons of sweat during each shift. One gallon of sweat, containing 0.3 per cent salt, would contain approximately a heaping teaspoonful of salt. Heat sickness is most likely to affect a new man on the job. Persons with weak hearts are more susceptible than persons who are not so afflicted. Men who are not accustomed to hard work in high temperatures do not sweat properly. The heat regulating agencies of the body do not become adjusted at once to the

new environmental conditions, and as a result, either too much or too little moisture is lost through sweating. Therefore, a proper body heat balance is not maintained. Unless some organic disease, however, interferes, the body usually becomes adjusted to the heat within a few days, and the heat regulating mechanism functions normally.

There are many symptoms of heat sickness. In mild attacks, the worker may feel dizzy, develop a headache, become faint, vomit, and experience a sudden soreness of many muscles of the body. Following the attack, the person is sick for a few days, and during this time should stay in bed, or rest at home. In severe attacks of heat prostration, the worker may lose consciousness and become delirious; the lips and fingers may become blue; and cramps may develop in the arms, legs, back and abdomen. The pulse is usually rapid, the blood pressure low, breathing is shallow and fast, and the temperature is above normal. In some cases the body temperature may drop below normal. Sometimes the full effects of heat sickness do not appear until the worker has reached home.

Certain foods help to prevent heat sickness. Milk contains 0.3 per cent of sodium chloride, and is one of the best sources of salt, both for the treatment and the prevention of heat prostration. Meat is another excellent source of salt in the diet. In general, workers who drink alcoholic beverages to excess

are more likely to be overcome by heat than those who are temperate in their drinking habits. A worker will suffer less from heat if he wears a shirt or an undershirt, than if all clothing above the waist is removed. The evaporation of moisture from sweat-soaked clothing, helps to cool the body.

A mild attack of heat sickness may be relieved by drinking from one to three quarts of a 0.3 per cent salt solution. Such a solution is prepared by adding a level teaspoonful of salt to a quart of water, or a heaping teaspoonful to a half-gallon of water. Since an attack of heat prostration may result in serious illness, it is always advisable to place the affected worker at once under the care of a physician.

Heat sickness may be prevented to a large extent, by the judicious use of salt, which can be given the workers in the drinking water, or in the form of salt tablets. Such tablets may be obtained in dispensing containers, or in small individual pocket containers.

Most industrial physicians have concluded that the correct amount of salt for the average worker to take during the day is one teaspoonful of salt, or its equivalent in salt tablets, for every gallon of water he drinks. Eight 10-grain salt tablets are about the equivalent of one teaspoonful of salt.

Workers doing average hot work drink about one gallon of water per day. Those who are doing strenuous physical work under the hottest conditions, seldom drink more than two gallons of water per day.

ASBESTOS DUST STUDIES

Asbestos dust, in a size range smaller than 10 microns in diameter, has been found to cause pulmonary fibrosis when inhaled over prolonged periods, in concentrations greater than five million particles per cubic foot of air. At the request of the Bureau of Accident Prevention, State Industrial Accident Commission, a series of atmospheric dust counts were made by Industrial Hygiene Services during May in a plant that manufactures asbestos-cement pipe, to determine the concentration of asbestos dust at the breathing level of employees who operate mixing and cutting machines.

The results of these dust studies indicated that at several locations employees were exposed to concentrations of asbestos dust in excess of a safe limit. Based on these findings, recommendations have been submitted to plant officials for the improvement of local exhaust ventilation and other existing dust control methods, in order to eliminate the potential health hazard to which employees in the plant are exposed.

HEALTH HAZARDS IN AIRCRAFT PRODUCTION

A series of studies of occupational dermatoses in California aircraft manufacturing plants were made recently by a representative of the National Institute of Health in cooperation with the State Industrial Hygiene Services. The investigation covered nine plants employing 87,500 workers—more than 90 per cent of all employees engaged in this industry.

The most frequent causes of skin diseases in this industry are cutting and lubricating oils in machine shops; organic solvents used in spray painting; dipping and degreasing operations; paint and resin coatings on duraluminum; acids and caustics in cadmium plating and chrome anodizing processes; zinc chromate paint; fluoride fumes from welding operations; mahogany dust in woodworking shops; and organic acids and solvents in plaster shops. Of 36 employees with skin lesions who were examined, 23 were found to have dermatoses of occupational origin. Employers and employees agreed to follow precautionary measures as recommended.

In addition to the occupational skin hazard investigations, other studies were made in aircraft plants, which has led to the removal of conditions that might be detrimental to the health of workers.

MEDICAL MILK COMMISSION DISBANDS

After 33 years of service the San Francisco Medical Milk Commission has disbanded for the reason that pure milk is a regular commodity in San Francisco now and no more "certified" milk is sold in the city.

The members of the first milk commission were Dr. Alfred B. Spalding, the late Dr. Adelaide Brown, Dr. Langley Porter, Dr. Sanford Blum and Dr. Lewis Sayre Mace. They had the active cooperation of city officials and achieved remarkable results in securing pure milk supplies for San Francisco children.

In the 33 years of its existence tremendous strides were made in the improvement of child health. Unquestionably, the work of this commission was a contributing factor to the reduced number of infant deaths in San Francisco.

"The way to wealth is as plain as the way to market. It depends chiefly on two words, industry and frugality; that is, waste neither time nor money, but make good use of both. Without industry and frugality nothing will do; with them everything."—Franklin.

DEFENSE NUTRITION INSTITUTE

At the University of California, Berkeley, June 30th to July 12th, under the sponsorship of the California Nutrition Committee (for Defense) and the Summer Session of the university a refresher course for professional workers in nutrition will be held June 30 to July 12, 1941. Teachers, dietitians, home demonstration agents, public health nurses, dentists, doctors, social welfare workers and others interested in improving the nutrition of the population are invited to attend. Twenty half-day sessions are planned, 10 of them to consist of lectures, discussions and demonstrations on the newer aspects of scientific nutrition and 10 to consist of similar discussions and demonstrations of means of applying this knowledge to the practical improvement of the diets of the people. Separate sections for teachers, home economists, nurses and other professional groups may be organized for the latter sessions.

This institute is offered only to professional persons who have already a substantial grounding in the subject but who need to bring this knowledge up to date. A statement signifying satisfactory attendance and participation in the institute will be issued to those who desire it, but no university credit is allowed. The registration fee is \$12.

Registration in the Summer Session will include the privilege of attending the institute, and credit for Home Economics 131 may be earned by those so registered. This course will convene daily during the four weeks following the close of the institute.

Program

- June 30. Calories. How much food do we need?
- July 1. Proteins. What difference do the amino acids make?
- July 2. Minerals. Are the trace minerals important, too?
- July 3. Vitamins A and C. Is ascorbic acid all there is to vitam C? Is carotene just as useful as vitamin A?
- July 7. Riboflavin, pyridoxin and nicotinic acid. Do they function in human nutrition?
- July 8. Thiamin (B¹) and the filtrate factors. How many filtrate factors are there and what do they do?
- July 9. The human requirements. Must we fortify our foods?
- July 10. Nutritional status determinations. Are there physical signs which accurately show latent diet deficiencies?
- July 11. Food composition, processing and vitamin assays. Are diet calculations reliable?
- July 12. Community nutrition programs. What can be done in the cities and in the country to improve morale through nutrition?

POISON GAS FROM UNVENTED FORGES

Several employees in a railroad maintenance and repair shop have complained recently of symptoms such as headache, nausea, and dizziness, which were suggestive of possible carbon monoxide inhalation from unvented gas burners. At the request of the management, a series of quantitative carbon monoxide determinations were made in the vicinity of gas-fired furnaces and forges. It was found that carbon monoxide, in dangerous quantities, was emanating from the unvented furnaces and forges and was reaching the breathing zone of workers in concentrations exceeding the recommended safe limit for prolonged exposure of 100 parts per million parts of air. As a result of these tests, company officials are taking immediate steps to put into effect the recommendations of this department that all gas-burning installations in the shops be equipped with hoods and vent pipes to conduct carbon monoxide and other combustion products to the outside atmosphere.

MORBIDITY**Complete Reports for Following Diseases for Week Ending June 7, 1941****Chickenpox**

1,156 cases: Alameda County 11, Alameda 14, Albany 35, Berkeley 17, Oakland 93, Butte County 3, Gridley 1, Contra Costa County 6, El Dorado County 1, Placerville 3, Fresno County 16, Fresno 23, Sanger 2, Humboldt County 1, Kern County 51, Bakersfield 57, Tehachapi 1, Kings County 3, Los Angeles County 75, Alhambra 3, Burbank 3, El Monte 1, Glendale 3, Glendora 1, Inglewood 2, Long Beach 19, Los Angeles 81, Manhattan 9, Monrovia 6, Montebello 3, Pasadena 13, Pomona 22, Redondo 8, San Fernando 4, San Gabriel 1, Santa Monica 4, South Pasadena 1, Whittier 1, Torrance 1, South Gate 3, Maywood 1, Gardena 1, Madera County 1, Madera 10, Corte Madera 1, San Anselmo 6, Sausalito 1, Fort Bragg 1, Merced County 3, Monterey 1, Napa 3, Orange County 38, Anaheim 4, Brea 3, Fullerton 7, Orange 13, Santa Ana 4, La Habra 4, Placentia 3, Banning 6, Riverside 8, Sacramento County 39, Sacramento 36, Hollister 5, San Bernardino County 1, Ontario 3, Redlands 1, San Bernardino 9, Upland 2, San Diego County 10, Coronado 2, La Mesa 2, National City 4, San Diego 94, San Francisco 63, San Joaquin County 11, Lodi 4, Stockton 21, San Luis Obispo County 1, Burlingame 6, Redwood City 4, Daly City 4, San Bruno 28, San Mateo 1, San Carlos 1, Menlo Park 2, Santa Barbara County 1, Santa Clara County 5, Palo Alto 11, San Jose 23, Santa Cruz County 2, Santa Cruz 1, Solano County 3, Sonoma County 8, Petaluma 3, Stanislaus County 3, Modesto 5, Tulare County 3, Lindsay 6, Porterville 1, Visalia 3, Ventura County 1, Ventura 1, Davis 1.

Diphtheria

16 cases: Oakland 2, Butte County 2, Imperial County 4, Los Angeles County 1, South Gate 3, San Francisco 1, Tulare County 1, Ventura 1, Winters 1.

German Measles

1,425 cases: Alameda County 4, Alameda 7, Albany 3, Berkeley 7, Oakland 12, Amador County 3, Jackson 8, Gridley 1, El Dorado County 162, Placerville 71, Fresno County 6, Fresno 17, Orland 180, Willows 17, Inyo County 3, Bishop 28, Kern County 15, Bakersfield 4, Kings County 7, Hanford 6, Lassen County 2, Los Angeles County 135, Alhambra 6, Burbank 4, Claremont 2, El Monte 13, Glendale 10, Huntington Park 4, La Verne 1, Long Beach 20, Los Angeles 39, Manhattan 1, Monrovia 1, Montebello 3, Pasadena 10, Pomona 4, San Fernando 1, San Gabriel 1, San Marino 4, Santa Monica 5, Sierra

Madre 1, Whittier 6, Hawthorne 1, South Gate 6, Monterey Park 1, Maywood 2, Bell 1, Madera County 4, Chowchilla 1, Marin County 7, Mill Valley 9, San Anselmo 6, Sausalito 6, Monterey County 5, Carmel 3, Monterey 1, Pacific Grove 1, Salinas 2, Napa 1, Orange County 33, Anaheim 13, Brea 4, Fullerton 12, Huntington Beach 1, Newport Beach 3, Orange 6, Santa Ana 12, Seal Beach 4, La Habra 11, Laguna Beach 2, Placentia 3, Plumas County 3, Riverside 11, Sacramento County 3, Sacramento 34, North Sacramento 1, San Bernardino County 2, San Diego County 10, Chula Vista 4, El Cajon 1, Escondido 2, La Mesa 2, National City 6, Oceanside 1, San Diego 71, San Francisco 31, San Joaquin County 3, Manteca 3, Stockton 15, San Luis Obispo County 10, Arroyo Grande 1, Paso Robles 11, San Luis Obispo 5, San Mateo County 1, Daly City 1, Redwood City 1, San Carlos 1, Belmont 1, Santa Barbara County 5, Lompoc 1, Santa Barbara 1, Santa Maria 9, Santa Clara County 1, Palo Alto 11, San Jose 4, Sunnyvale 1, Santa Cruz County 3, Santa Cruz 3, Yreka 2, Solano County 4, Sonoma County 27, Santa Rosa 1, Stanislaus County 5, Sutter County 2, Ventura County 4, Ventura 1, Yolo County 4, Yuba County 1.

Influenza*

495 cases: Oroville 1, Kern County 262, Bakersfield 188, Los Angeles County 12, El Monte 1, Long Beach 4, Los Angeles 8, Pasadena 2, Sacramento County 1, Escondido 1, Yreka 2.

Malaria

4 cases: Butte County 1, Fresno County 1, Los Angeles County 1, Sutter County 1.

Measles

628 cases: Alameda County 3, Alameda 3, Albany 1, Berkeley 4, Oakland 5, Butte County 2, Fresno County 2, Fortuna 3, Kern County 38, Bakersfield 10, Delano 2, Kings County 1, Lassen County 1, Los Angeles County 63, Alhambra 1, Compton 1, Glendale 9, Huntington Park 25, Inglewood 1, Long Beach 4, Los Angeles 61, Manhattan 2, Pomona 2, San Marino 3, Santa Monica 16, Sierra Madre 1, South Pasadena 4, Lynwood 1, South Gate 22, Maywood 1, Bell 7, Gustine 1, Monterey County 11, Carmel 1, Monterey 5, Pacific Grove 2, Soledad 9, Napa 3, Grass Valley 88, Orange County 3, Anaheim 1, Fullerton 3, Newport Beach 3, Seal Beach 1, Placentia 1, Plumas County 13, Sacramento County 8, Sacramento 4, North Sacramento 3, San Bernardino County 3, Chino 1, Colton 1, San Diego County 4, Coronado 2, La Mesa 2, San Diego 1, San Francisco 2, San Joaquin County 1, Stockton 12, San Luis Obispo 1, San Mateo County 1, Burlingame 2, South San Francisco 1, San Carlos 1, Santa Maria 2, Santa Cruz County 1, Santa Cruz 15, Yreka 9, Solano County 20, Vallejo 4, Sonoma County 7, Petaluma 11, Stanislaus County 2, Modesto 2, Red Bluff 26, Exeter 3, Ventura County 4, Santa Paula 2, Yolo County 3, California 1.**

Mumps

1,163 cases: Alameda 12, Berkeley 4, Oakland 17, San Leandro 2, Jackson 30, Contra Costa County 4, Del Norte County 1, El Dorado County 1, Placerville 1, Fresno County 5, Kern County 42, Bakersfield 38, Delano 3, Hanford 1, Los Angeles County 163, Alhambra 4, Burbank 12, El Monte 1, Glendale 4, Glendora 3, Huntington Park 23, Inglewood 7, La Verne 1, Long Beach 4, Los Angeles 63, Manhattan 1, Monrovia 8, Montebello 11, Pasadena 6, Pomona 7, San Fernando 1, San Gabriel 2, San Marino 1, Santa Monica 5, Whittier 10, Hawthorne 2, South Gate 4, Monterey Park 5, Maywood 6, Bell 12, Madera 9, Chowchilla 1, Marin County 1, Monterey County 3, Carmel 1, Monterey 6, Salinas 2, Napa 2, Orange County 32, Anaheim 4, Fullerton 1, Huntington Beach 2, Newport Beach 3, Orange 4, Santa Ana 23, La Habra 10, Laguna Beach 1, Placentia 5, Tustin 2, Plumas County 5, Riverside County 8, Riverside 1, Indio 1, Palm Springs 3, Sacramento County 6, Sacramento 6, North Sacramento 1, San Bernardino County 17, Ontario 2, Redlands 9, San Bernardino 1, San Diego County 36, Chula Vista 1, El Cajon 2, La Mesa 17, Oceanside 4, San Diego 154, San Francisco 83, San Joaquin County 17, Lodi 4, Paso Robles 8, Burlingame 1, Daly City 1, San Bruno 3, San Mateo 1, Santa Barbara County 7, Lompoc 10, Santa Barbara 4, Santa Clara County 13, Los Gatos 1, Mountain View 1, Palo Alto 1, San Jose 10, Santa Cruz 2, Solano County 6, Sonoma County 31, Petaluma 1, Santa Rosa 1, Stanislaus County 4, Modesto 2, Turlock 4, Sutter County 2, Red Bluff 1, Exeter 1, Ventura County 7, Oxnard 4, Santa Paula 6, Ventura 2, Yuba County 1.

Pneumonia (Lobar)

53 cases: Oakland 1, Oroville 1, Los Angeles County 8, Compton 1, Long Beach 1, Los Angeles 20, Redondo 1, San Gabriel 1, Santa Monica 1, Hawthorne 1, Monterey Park 1, Madera County 2, Napa County 1, Napa 1, Sacramento 2, San Bernardino County 3, San Diego 1, San Francisco 1, Vallejo 1, Sonoma County 1, Yolo County 1.

Scarlet Fever

108 cases: Berkeley 1, Oakland 4, San Leandro 2, Butte County 2, Gridley 2, Oroville 3, Contra Costa County 2, Fresno 1, Kern County 4, Bakersfield 1, Kings County 2, Los Angeles 12, Burbank 1, Glendale 1, Los Angeles 25, Manhattan 2, Pasadena 2, Santa Monica 1, Sierra Madre 1, Torrance 2, Hawthorne 1, Gardena 1, Sausalito 1, Merced 1, Anaheim 2, Fullerton 1,

Santa Ana 1, Plumas County 1, Sacramento 2, San Bernardino County 1, Redlands 1, San Diego 3, San Francisco 5, San Joaquin County 4, Stockton 1, Redwood City 2, Santa Clara County 1, Solano County 1, Sonoma County 2, Stanislaus County 1, Sutter County 1, Tulare County 1, Yuba County 1.

Smallpox

No cases reported.

Typhoid Fever

3 cases: Fresno County 1, Los Angeles 2.

Whooping Cough

905 cases: Alameda County 6, Alameda 7, Berkeley 22, Livermore 1, Oakland 31, Butte County 1, Contra Costa County 3, El Cerrito 2, El Dorado County 1, Fresno County 13, Fresno 5, Sanger 3, Willows 27, Brawley 2, Inyo County 6, Bishop 3, Kern County 31, Bakersfield 18, Hanford 2, Lemoore 1, Los Angeles County 86, Alhambra 9, Burbank 4, El Monte 1, Glendale 2, Huntington Park 2, Inglewood 2, Long Beach 22, Los Angeles 63, Monrovia 9, Montebello 2, Pasadena 5, Pomona 2, Redondo 5, San Marino 1, Santa Monica 12, South Pasadena 8, Whittier 2, Lynwood 2, Hawthorne 2, South Gate 4, Maywood 1, Bell 3, Gardena 2, Fort Bragg 1, Monterey County 14, King City 1, Salinas 3, Soledad 1, Napa County 1, Orange County 14, Anaheim 1, Santa Ana 8, Laguna Beach 3, Riverside 1, Sacramento County 1, Sacramento 41, San Bernardino County 1, Redlands 1, San Bernardino 1, Upland 2, San Diego County 37, Escondido 1, La Mesa 12, National City 42, Oceanside 1, San Diego 76, San Francisco 31, San Joaquin County 64, Lodi 14, Stockton 9, San Luis Obispo County 2, Paso Robles 4, San Mateo County 6, Redwood City 4, San Bruno 6, San Carlos 1, Santa Barbara County 7, Santa Maria 11, Santa Clara County 3, San Jose 5, Santa Cruz County 4, Watsonville 3, Petaluma 2, Stanislaus County 8, Modesto 1, Red Bluff 4, Tulare County 8, Porterville 2, Ventura County 3, Oxnard 1, Santa Paula 1, Ventura 1.

Meningitis (Epidemic)

2 cases: Los Angeles 1, Siskiyou County 1.

Dysentery (Amoebic)

5 cases: San Bernardino County 1, Chino 1, Ontario 2, Upland 1.

Dysentery (Bacillary)

18 cases: Fresno County 1, Los Angeles County 1, Los Angeles 14, Sonoma County 1, Oxnard 1.

Leprosy

One case: Los Angeles County.

Poliomyelitis

5 cases: Los Angeles 3, Pomona 1, California 1.**

Tetanus

3 cases: Los Angeles County 1, Whittier 1, Yolo County 1.

Trachoma

One case: Los Angeles.

Encephalitis (Epidemic)

One case: San Rafael.

Typhus Fever

One case: Alhambra.

Jaundice (Epidemic)

One case: Sutter County.

Food Poisoning

5 cases: Monterey County.

Undulant Fever

12 cases: Kern County 3, Bakersfield 1, Delano 1, Los Angeles County 3, Los Angeles 1, Montebello 1, Santa Ana 1, Tulare County 1.

Epilepsy

51 cases: Oakland 2, Fresno County 1, Kern County 1, Los Angeles 27, Whittier 1, South Gate 1, San Bernardino County 1, San Francisco 7, San Joaquin County 6, Sonoma County 3, Sutter County 1.

Rabies (Animal)

8 cases: Fresno County 1, Fresno 1, Los Angeles County 5, Los Angeles 1.

** Cases charged to "California" represent patients ill before entering the State or those who contracted their illness traveling about the State throughout the incubation period of the disease. These cases are not chargeable to any one locality.

* Mostly delayed reports.



printed in CALIFORNIA STATE PRINTING OFFICE
SACRAMENTO, 1941 GEORGE H. MOORE, STATE PRINTER

98601 6-41 6750

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